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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,223	10/05/2001	Mitchell Rosen	1819/100211	4639

7590

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EXAMINER

WU, JINGGE

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 04/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/972,223

Applicant(s)

ROSEN ET AL.

Examiner

Jingge Wu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-35,37-39,41 and 42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 33-35,37-39 and 41 is/are allowed.
- 6) ☐ Claim(s) 1-6,14,18,21-26, 32, and 42 is/are rejected.
- 7) ☐ Claim(s) 7--13, 15-17, 19-20 and 27-31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Amendment

1. Applicants' response to the last Office Action, filed March 3, 2003 has been entered and made of record.
2. The rejection of claims 36 and 40 are rendered moot by applicant's cancellation of those claims.
3. In view of the Applicant's amendments, the objection (claim 21 and 32) are expressly withdrawn.

Remarks

4. Applicant's arguments with respect to claims 1 and 22 have been fully considered, but they are not persuasive.

a. Applicant argues that Berns does not teach that "satisfy a first error criterion", which the Examiner has cited a least square matrix as the first criterion. Applicant further argues that the least square is a function that "may be the minimum, but still may not satisfy a chosen criterion for an acceptable error for the spectral image capture. Finally, Applicant argues that what Berns has done is different from what the specification disclosed in page 7, lines 19-25.

However, in response to applicant's argument, Examiner would like to point out that claim language is given its broadest reasonable interpretation. The specification is not measure of invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding the prior art. *Ir re Sporck*, 55CCPA 743, 386 F. 2d 924, 155 USPQ 687 (1968). In the instant case, first, Berns clearly show that a least square matrix M is used for computing (transforming) the estimated spectral reconstruction (see paper #8). In addition, it is well known that least square is a error

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criterion because the definition of least square is minimum the square the difference of errors. Second, the claim language only calls for "satisfy error criterion". Berns teaches that the spectral reconstruction is conducted by satisfy least square criterion (see page 17 formula 3). Thus, the claim language is anticipated by Berns. Finally, other limitations cited by the Applicant can not be read into the broad claim language for the purpose of avoiding Berns. If applicant intends to claim the limitations, he should amend the claims appropriately.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6, 14, 18, 22-27, and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by the article "Multi-spectral color reproduction research at the Munsell Color Science Laboratory" to Berns et al.

As to claim 1, Berns discloses a method for spectral imaging, comprising:

capturing high spectral resolution data of at least a first portion of a first scene using a first plurality of channels (page 16, section 3, note that the first plurality of channels could be 61 channels);

determining a first set of channels (minimum number of channels) from a second plurality of channels which can reconstruct spectral of the first portion of first scene

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(page 16, section 3, page 18) to satisfy a first error criterion when compared with the captured high spectral resolution data (Fig. 1, page 15-17, section 3, note that the error criterion is the least-square, see page 17, formula 3); and

capturing pixel data of at least a second portion of at least first scene using the first set of channels (page 16-18, section 3, note that capturing or reconstructing at least a portion of pixel data is inherent when the portion of the image is reconstructed).

As to claim 2, Berns further discloses the first set of channels comprises a smallest number of the plurality of channels (minimum channels) which can be used to reconstruct spectral of the first portion of the first scene to satisfy a first error criterion when compared with the captured high spectral resolution data (page 16, section 3, note that the error criterion is the least-square).

As to claim 3, Berns further discloses the data of the channels are stored (Fig. 1), other limitations are discussed with regard to claim 1.

As to claims 4-6, Berns further discloses determining a first transform from the first set of channels and using the transform to reconstruct image spectra (Fig. 1, page 16, section 3, note that equations 1 and 2 are transforms, the storing the transform is inherent), other limitations are addressed with regard to claim 1.

As to claims 14, Berns further discloses storing the captured pixel data (Fig. 1).

As to claim 18, Berns further discloses the first error criterion requires that the reconstructed spectra of the first portion of the first scene be within a first error tolerance or the reconstructed spectra be associated with a minimum value for predetermined

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metric when compared with the captured high spectral resolution data (Fig. 3, page 16-17, section 3, note that the error criterion is the least-square).

As to claims 22-26, the claims are corresponding system claims to claims 1-6. The discussions are addressed with regard to claims 1-6.

As to claim 42, Berns further discloses the imaging system comprising:
a first imaging system that captures the high spectral resolution data (page 18-19) of at least portion of the first scene using the plurality of channels (Fig. 1, page 15-17); and

a second imaging system captures the pixel data of the scene using the first set of channels (Fig. 1, page 15-17).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 21, 32, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berns in view of US 5949914 to Yuen.

As to claims 21, 32, and 41, Berns dose not explicitly mention the number of first and second channels or subsystems are identical.

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Yuen, in an analogous environment, discloses using multiple identical channels or sub-imaging systems (Fig. 9a).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of Yuen in the method of Berns in order to increase the resolution of the multi-spectral image data (Yuen, col. 2 lines 3-12).

Allowable Subject Matter

5. Claims 7-13 , 15-17, 19-20, 27-31, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7, 20, 27 are objected. Claims 8-13, 15-17 and 19 depend from claim 7, therefore, are objected. Claims 28-31 depend from claim 27, therefore, are objected.

Claims 33 and 37 are allowed. Claims 34-35 and claims 38-39 and 41 depend from claims 33 and 3 respectively are, therefore, allowed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications should be directed to Jingge Wu whose telephone number is (703) 308-9588. He can normally be reached Monday through Thursday from 8:00 am to 5:30 pm. The examiner can be also reached on second alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should be directed to TC customer service whose telephone number is (703) 306-0377.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amelia Au, can be reached at (703) 308-6604.

The Working Group Fax number is (703) 872-9314.

Jingge Wu
Primary Patent Examiner

